

We claim:

1. A coated semiconductor device having a plurality of electrodes embedded therein and exposed to an upper surface, and a coating layer coating the upper surface of the semiconductor device, wherein the coating layer is from about 0.5 to about 100 microns thick and is composed of a mixture of controlled porosity glass (CPG) particles having an average particle size of from about 0.25 to about 25 microns, and a thickening agent.

5 2. The coated semiconductor device of claim 1 wherein the thickness of the coating layer is from about 1 to about 25 microns.

10 3. The coated semiconductor device of claim 2 wherein the thickness of the coating layer is from about 3 to about 15 microns.

4. The coated semiconductor device of claim 1 wherein the thickening agent is selected from the group consisting of solid polymers of olefins, polyethylene, polyvinyl difluoride, polypropylene and polybutylene; vinyl resins, polytetrafluoroethylene (PTFE), polyvinylchloride, polyacrylates, polyvinylacetate and polymethylmethacrylate; polycarbonates and polysulfones, optionally in combination with an acid selected from the group consisting of HCl, HBr, HI, HNO₃, H₃PO₄, HClO₄, acetic acid, sulfuric acid, organic acids, acetic acid, citric acid, malic acid, acids with the structure R – COOH, R – SO₃H, and R – PO₃H₂, nitric acid phosphoric acid, and combinations thereof.

5 5. The coated semiconductor device of claim 4 wherein the thickening agent is a resin.

20 6. The coated semiconductor device of claim 5 wherein the thickening agent is PTFE in particle form or in aqueous suspension.

7. The coated semiconductor device of claim 6 wherein the PTFE particles are from about 0.005 to about 1.0 microns.

25 8. The coated semiconductor device of claim 1 wherein the semiconductor device is made from silicon nitride and the electrodes are made from platinum.

9. A formulation for coating a semiconductor device, wherein the semiconductor device comprises a plurality of electrodes, comprising a mixture of controlled porosity glass (CPG) particles having an average particle size of from about 0.25 to about 25 microns, and a thickening agent.

30 10. The formulation for coating a semiconductor device of claim 9, wherein the thickness of the coating layer is from about 1 to about 25 microns.

11. The formulation for coating a semiconductor device of claim 10, wherein the thickness of the coating layer is from about 3 to about 15 microns.

35 12. The formulation for coating a semiconductor device of claim 9, wherein the thickening agent is selected from the group consisting of solid polymer of olefins, polyethylene, polypropylene and polybutylene; polyvinylidifluoride, vinyl resins, polyacrylates,

polytetrafluoroethylene (PTFE), polyvinylchloride, polyvinylacetate and polymethylmethacrylate; polycarbonates and polysulfones, optionally in combination with an acid selected from the group consisting of HCl, HBr, HI, HNO₃, H₃PO₄, HClO₄, acetic acid, sulfuric acid, organic acids, acetic acid, citric acid, malic acid, acids with the structure R – COOH, R – SO₃H, and R – PO₃H₂, nitric acid phosphoric acid, and combinations thereof.

13. The formulation for coating a semiconductor device of claim 9, wherein the thickening agent is a resin.

14. The formulation for coating a semiconductor device of claim 9, wherein the thickening agent is PTFE in particle form or in aqueous suspension.

10 15. The formulation for coating a semiconductor device of claim 9, wherein the PTFE
particles are from about 0.005 to about 1.0 microns.